

# *Expanding Rural Renewable Energy Systems*

*Bob White*

*Waste to Energy Workshop*

*June 6, 2006*

*USDA Rural Development*



# *Partnering for America's Future*

## *USDA –*

- Rural Development*
- Farm Service Agency*
- Natural Resources and  
Conservation Service*

*Department of Energy*

*Environmental Protection Agency*



# *The Farm Security and Rural Investment Act of 2002*

- *Public Law 107-171*
- *Section 9006 –Renewable Energy Systems and Energy Efficiency Improvements*



# *Public Law 107-171*

## *Section 9006 - -*

*Establishes a grant, loan, and loan guarantee program to assist eligible farmers, ranchers, and rural small businesses in purchasing renewable energy systems and for making energy efficiency improvements.*



# *Funding Availability*

*Fiscal Years 2003-2007*

*\$23 Million per year*



# *General Provisions*

- *Grant amount not to exceed 25 percent of activity funded.*
- *Combined loan/grant not to exceed 50 percent of cost of activity funded.*



# *To be considered when making renewable energy system loans/grants*

- *Type of system to be purchased*
- *Estimated quantity of energy to be generated*
- *Environmental benefits of system*
- *Extent of system replication*
- *Expected energy savings*
- *Estimated length of Time for energy savings to equal cost*





# What is Renewable Energy?



**Biomass**



Courtesy NREL



# What is Renewable Energy?



**wind**

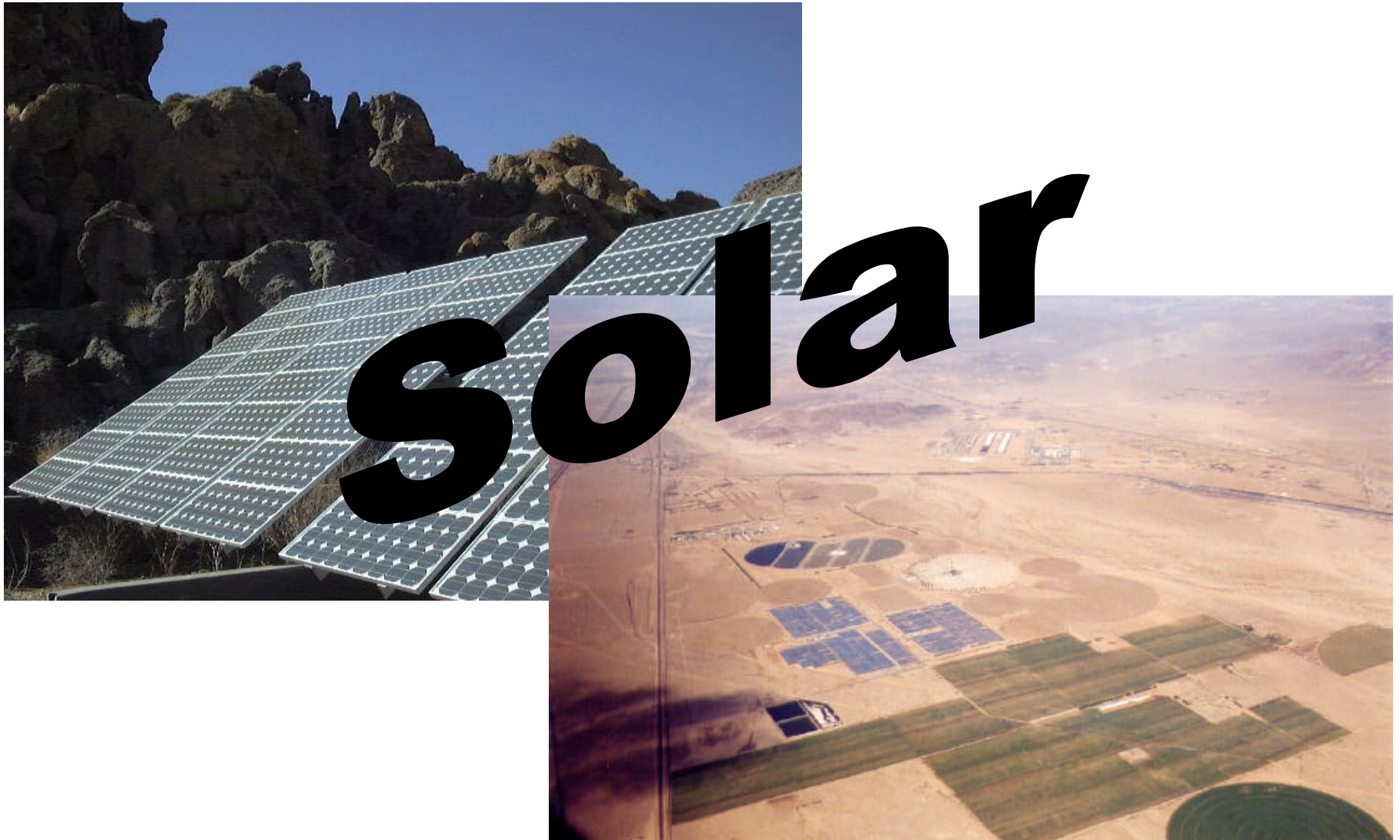
# What is Renewable Energy?



***Manure  
Digesters***



# What is Renewable Energy?



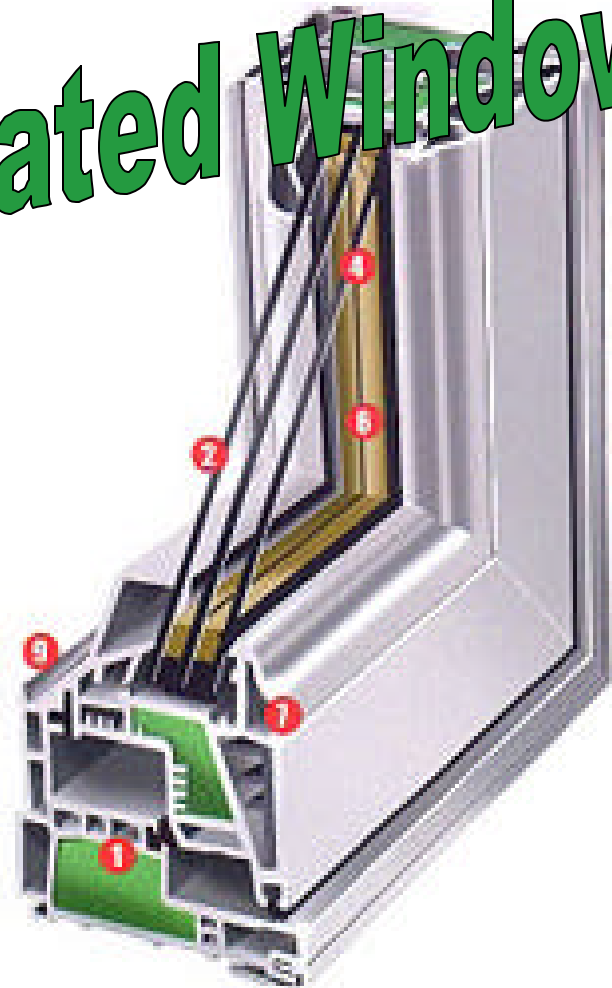


# What are Energy Efficiency Improvements?



**Added Insulation**

**Insulated Windows**



# What are Energy Efficiency Improvements?



# What are Energy Efficiency Improvements?



**Broiler House Upgrades**



# Energy Efficiency in Agriculture Buildings

## Integrated On-Site Power Systems

Anaerobic Digestion  
Photovoltaics  
Fuel Cells  
CHP

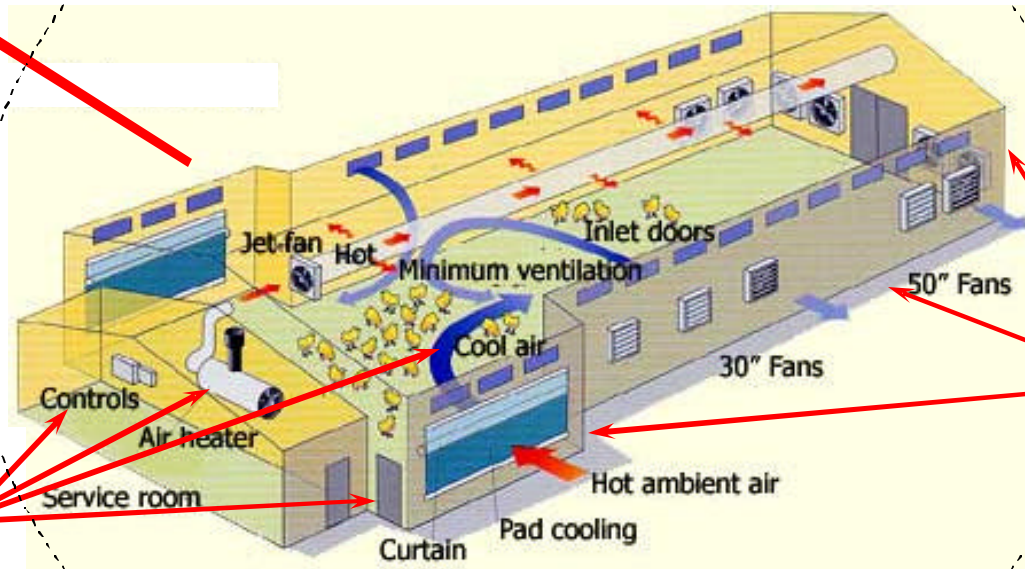
## Building Equipment

Space conditioning  
Lights  
Appliances  
Motors

## Building Systems ("whole-systems")

Design tools  
System Integration

## Building Envelope



**Buildings consist of a complex system of interacting components facing variable input conditions**



# Energy Efficiency in Agriculture Fuels and Inputs

- ? Greater fuel efficiency in tractors/equipment
- ? Cropping practices conservation-till/no-till
- ? Nutrient management
- ? Precision farming
- ? Plant breeding/genetic modification



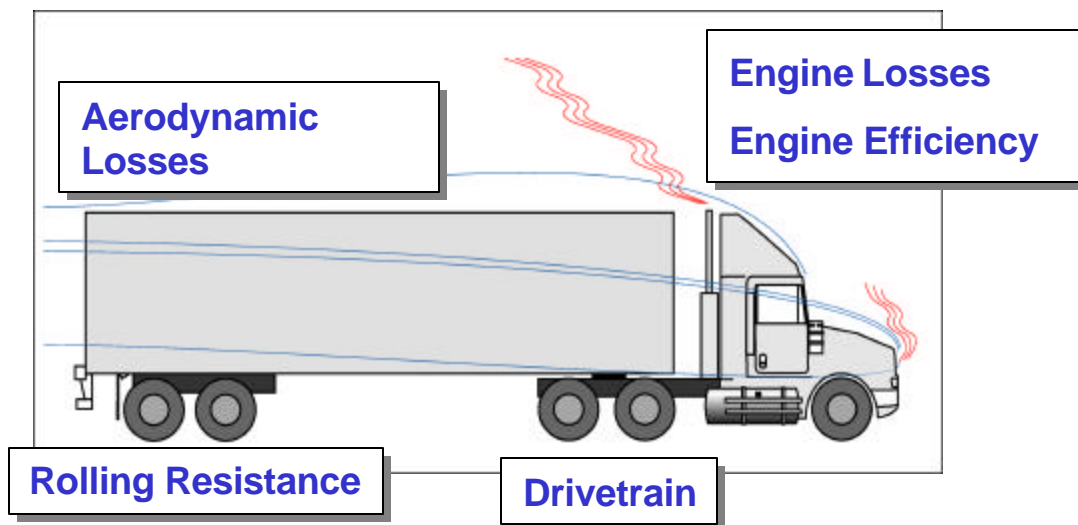
Credit: Canadian Fertilizer Institute

# Energy Efficiency in Agriculture Transportation

Trucks are critical for agriculture

Base = (6.6 mpg) • Target = (10.3 mpg)

ORNL 2000P-06202/rra



**1965**  
**787,000 Trucks**  
**6.66 Billion gals fuel**

**1997**  
**1,790,000 trucks**  
**20.3 Billion gals fuel**



485,000 truckloads of fresh fruits and vegetables leave California annually traveling 100 to 3,100 miles

# Energy Efficiency in Agriculture Processing

## Potential for Combined Heat and Power Systems (CHP)

Food & beverage processing industry is fifth largest industrial user of energy

There is an estimated 276 MWe of potential CHP in this industry

American food processing accounts for 26% of world output



**Beverages**



**Snack Foods & Peanut Butter**



**Grain & Oilseed Milling**



**Bakeries & Tortillas**



**Meat**



**Dairy**



**Fruit & Vegetable Preserving**



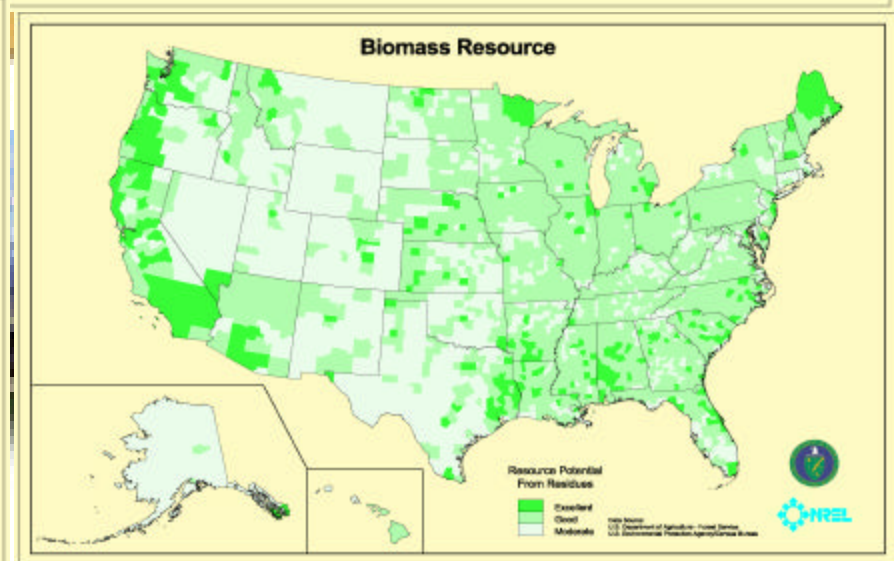
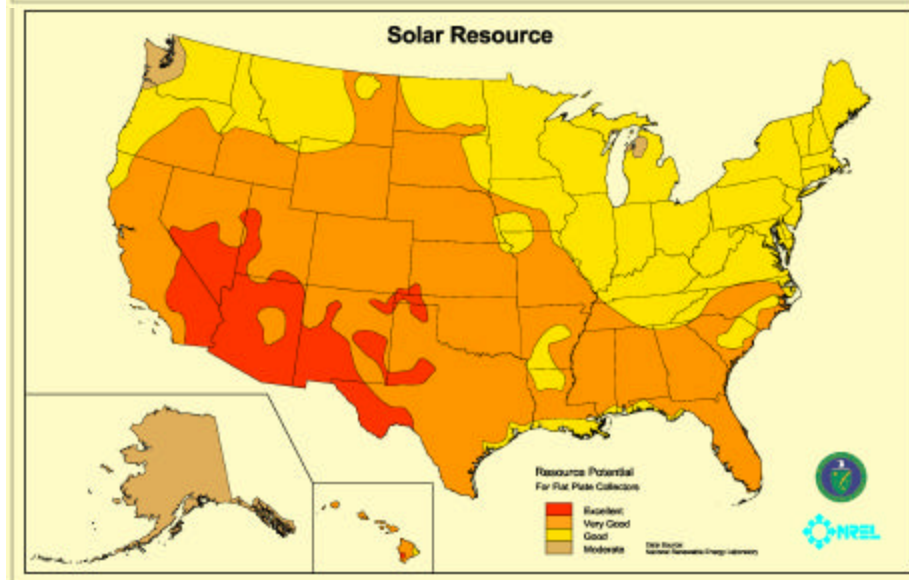
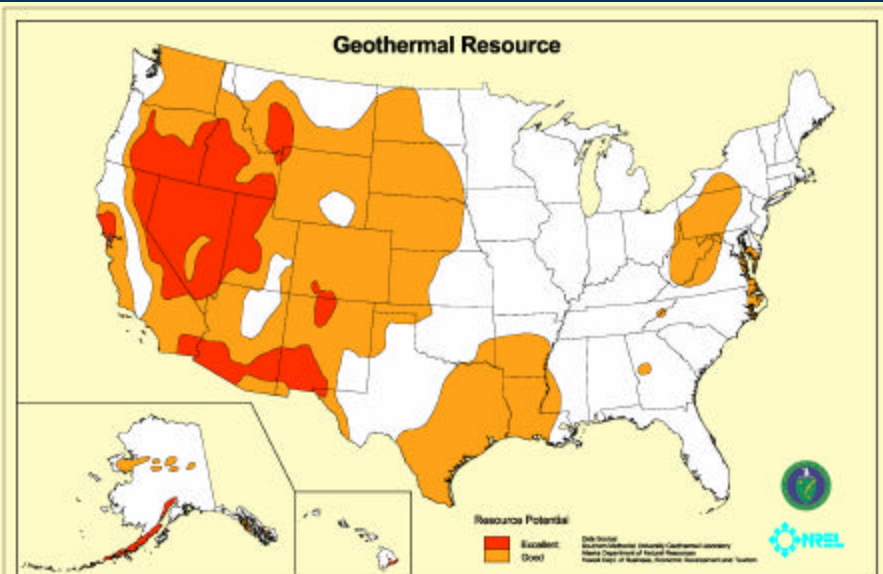
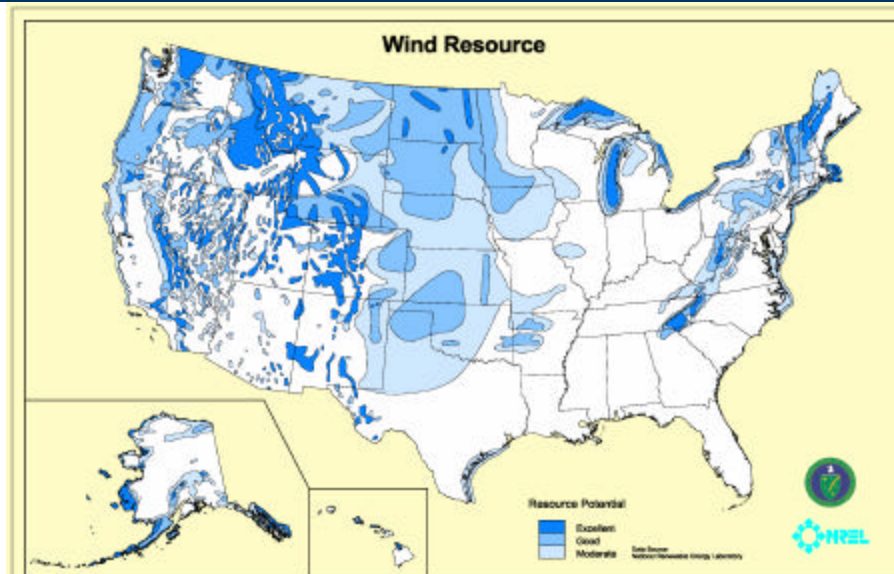
**Seafood Preparation & Packaging**



**Sugar & Confectioneries**



# Potential for Renewable Energy in Agriculture



# What Farmers and Ranchers Are Eligible?



- Demonstrated financial need (for grants)
- Must directly engage in production of agricultural products.
- At least 50% of gross income must be from their agriculture business.

# What Small Businesses are Eligible?

- Headquarters in a rural area.
- Proposed project in a rural area.
- Demonstrated financial need (grants only)
- Meets the definition of a small business according to SBA (<http://sba.gov/size/index.html> use the “NAICS search” option)
- A private entity including a sole proprietorship, partnership, corporation, a cooperative, and an electric utility
- Non-profit organizations and public entities are not eligible.

# What projects are eligible?

- The project must be for the purchase of a renewable energy system or energy efficiency improvement.
- Pre-commercial or commercially available and replicable technology.
- Technically feasible
- Located in a rural area
- Applicant must be owner of the system
- Adequate revenues for O&M



# Realizing the Potential

## Summary of Section 9006 Technology Grants for Energy Efficiency and Renewable Energy

	2003 (\$)	2004 (\$)	Change (\$)
<b>Digesters</b>	7,446,530	9,508,946	2,062,416
<b>Bioenergy</b>	2,529,005	3,136,132	607,127
<b>Efficiency, Buildings</b>	262,037	1,635,799	1,373,762
<b>Efficiency, Industrial</b>	1,242,215	177,175	(1,065,040)
<b>Geothermal</b>		285,353	285,353
<b>Hybrid</b>	2,112,977	126,992	(1,985,985)
<b>Solar</b>	725,566	54,822	(670,744)
<b>Wind, large</b>	6,701,769	7,301,540	599,771
<b>Wind, small</b>	187,134	585,290	398,156
<b>Total</b>	21,207,233	22,812,049	1,604,816

# Indiana to Date

2003            No Applications

2004    1 Application / \$500,000 / -0- Award

2005    4 Applications / \$1.7M            /    -0- Award

2006    4 Applications / \$ 1.3M / 1 Award

**Guarantee Applications Due August 1**

# Renewable Energy

## The Crystal Ball

- BIG, BIG, BIG Issue
- President Bush – State of the Union
- Have a new Energy Bill
- States are creating incentives
- Amazing what \$70 / Barrel oil will do
- House Ag Chairman/Senate Ag Chairman
- The “Love Train” has left the station

# As We REFLECT on What to Do Next



# Contact Information

## Program Websites

Value Added Producer Grant

<http://www.rurdev.usda.gov/rbs/coops/vadg.htm>

ENERGY

<http://www.rurdev.usda.gov/rbs/farmbill/index.html>

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